



ecology and environment, inc.

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International Specialists in the Environment

MEMORANDUM

TO: Pete Culver, RPO
FROM: Philip Dula, AFITOM
DATE: June 13, 1989

SUBJECT: Trip Report for the Screening Site Inspection of the
Linwood Mining and Minerals Site (formerly Umthun
Trucking), Buffalo, Iowa
TDD# F-07-8809-008 PAN# FIA0236SA
Site# V86 Project# 001
Superfund Contact: Pete Culver

Office 09-2-1
Linwood Mining
Materials
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INTRODUCTION

The Ecology and Environment, Inc., Field Investigation Team (E & E/FIT) was tasked by the Region VII U.S. Environmental Protection Agency to conduct a Screening Site Inspection (SSI) of the Linwood Mining and Minerals site (formerly Umthun Trucking). The site is located in Buffalo, Iowa, approximately five miles southeast of Davenport (Figure 1).

The purpose of this SSI was to determine whether ground water or surface water is being contaminated by heavy metals from fly ash deposited on site. Fly ash from coal fired lime kilns has been dumped on the ground surface over approximately three acres, and has been vented/precipitated into several acres of the abandoned underground mine works. The FIT collected ground water samples from existing wells, and surface water, sediment, soil, and fly ash to characterize site conditions.

McCarthy Improvement Company owns Linwood Quarry, and Linwood Mining and Minerals is a subsidiary of this company (Krewer 1989). The company addresses are:

McCarthy Improvement Co.
4321 East 60th
Davenport, Iowa
Telephone: 319-359-0321

Linwood Mining and Minerals Corp.
401 East Front St.
Davenport, Iowa 52804
Telephone: 1-800-345-7294



FIELD ACTIVITIES

Field activities were conducted the week of May 22, 1989, by FIT members Wes McCall, Team Leader; Gayle Hays, Site Safety Officer; and Rob Parsons and Debbie Palmer, Environmental Technicians. The FIT conducted a brief reconnaissance of the site vicinity on the evening of May 22. Site access was granted by Gaylord Krewer, Director of Mine Operations.

Some deviations from the EPA-approved work plan occurred during field work. The FIT collected one less downgradient soil sample in the vicinity of the ash piles. It was determined that one downgradient sample would be sufficient to characterize area conditions. Since the lime kilns were in operation, the FIT was unable to collect the three kiln ash samples from the mine precipitation area. Also, the pump was down on city of Buffalo well #1, so a sample could not be collected from this proposed location. One additional well sample and two additional mine water samples were collected at the Linwood Mine.

Soil, Ash, and Sediment Sampling

Fly ash samples were collected to determine the concentration of heavy metals present on site. Soil and sediment samples were collected to characterize background conditions and determine if any local contamination of these matrices has occurred. Each sample consisted of five aliquots taken from 0 to 6 inches with stainless steel spoons and homogenized in aluminum tins.

Table 1 summarizes the samples collected, and sample locations are depicted on Figure 2. The sample series for this activity was DC943. Seven ash samples, including a duplicate, were collected. Five samples and a duplicate were collected from the ash piles northeast of the Umthun Trucking terminal. According to Krewer, this ash was emplaced from 1975 to 1976. Samples were collected of the ash currently being produced at the bag house and blowers at the lime plant. These two samples were collected from kiln ash that was spilled on the ground.

Sediment samples were collected from Moore and Donaldson creeks which transect the site in a general north-south trend and empty into the Mississippi River. Samples were collected from Moore Creek upstream of the ash piles and from just below these piles. Donaldson Creek crosses the Scott County Landfill before flowing past the Linwood Quarry. Samples were collected from three locations in Donaldson Creek: north of the landfill; between the landfill and the quarry; and from below the quarry near the confluence of the creek and the Mississippi River. Sediments were collected after corresponding surface water sampling was completed. A downgradient soil

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sample was taken at the Umthun Trucking terminal about 50 feet north of the well head. Two background soil samples were collected: one at the Moses residence; one from just north of the surface kiln ash.

Water Sampling

Ground water samples were collected from industrial, municipal and residential wells; surface water samples were collected from corresponding sediment sample locations; and samples of mine water were collected from Linwood Mining operations. Wells were purged for three to five minutes before samples were collected. A total of 20 water samples was collected. Sample locations are summarized in Table 2 and sample locations are illustrated on Figures 1 and 2.

The surface water samples were collected at the same locations as sediment samples. The water samples were collected before sediments were disturbed.

In an effort to characterize the mine effluents, three mine water samples, plus one duplicate, were collected. Sample 016 was collected from a valve on the Johnson Marsh pump system. This discharge pond occupies the bottom of the abandoned quarry pit, and is used to rinse the stone and reduce dust at the mine. The pH of this sample was 9.8. Mine waters seeping and flowing in the mine are collected at the lower level in the mine at one location and pumped to a surface holding pond. The collection point is 186 feet below the surface. Sample 017 and its duplicate, 017D, were collected from the six-inch conduit at the surface pond. A third sample of the mine water was collected from the floor of the second level of the mine. This sample (015) was taken below a portion of the abandoned mine works that was sealed off to receive kiln effluents and ash particulates. The roof and walls displayed little evidence of seepage.

Ten wells were sampled during this SSI. Alvin Lee, Assistant Manager of the Linwood Limeplant, escorted the field crew to the wells at the Linwood office, quarry bathhouse, and limeplant. The Umthun Trucking well was resampled. This well had elevated concentrations of heavy metals and low pH (2.7) when previously sampled by the Iowa Department of Natural Resources. (IDNR). The well has been re-cased and grouted since the IDNR sampling. A pH of 7.6 was measured during the FIT sampling.

The supply well for the Scott County landfill, which overlies a portion of the mine, was sampled. The well is 325 feet deep and has a static water level of 170 feet.

The pump on city well #1 was down, so the FIT could not collect a sample at this proposed location. Well #2 was in operation and a sample (019) was collected. The sample was chlorinated, as there was no access valve before the chlorination system. The total depth of the well is 405 feet, with the pump at 145 feet. According to Ralph Jewett, Water Commissioner, the water quality from well #2 has deteriorated within the past year. The water contained a high concentration of dissolved solids and had a sulfur odor.

Samples from wells at the Willard Wing and Donald Moses residences were collected to serve as background. Samples were also collected from two residential wells adjacent to the site: Tom Egolf and Randy Dittmer. The Dittmers complained of poor water quality, including hardness and sulfur odor.

All sampling was conducted in level D personal protection in accordance with standard E & E and EPA sampling protocols. Ambient air was monitored on initial site entry and no readings above background were recorded. Therefore, air monitoring was discontinued. Water samples were submitted for total metals, sulfate, and chloride analysis. Soils will be analyzed for total metals, EP toxicity (if lead >500 ppm), and sulfides.

SUMMARY

Field activities for the SSI at Linwood Quarry were completed by a four-member FIT crew the week of May 22, 1989. Fifteen soil, ash, and sediment samples, and 20 water samples were collected. The samples were submitted to the Region VII EPA laboratory on May 25, 1989, for analysis. The water samples are to be analyzed for total metals, sulfate, and chloride anions. The soil samples will be analyzed for total metals, EP toxicity (if lead >500 ppm), and sulfide anions.

The final report for this project will be submitted eight to ten weeks after receipt of the complete analytical data.

Bibliography

Attachments: Figure 1: Site Location Map
Figure 2: Sample Location Map
Table 1: Soil Sample Summary
Table 2: Water Sample Summary

BIBLIOGRAPHY

Krewer, Gaylord, May 23, 1989, Director of Mine Operations, Linwood Quarry, Buffalo, Iowa, on-site interview with Wes McCall, E & E/FIT.

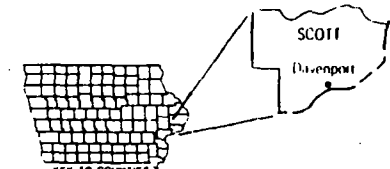
U.S. Geological Survey, 1970, 7.5. Minute Series Topographic Map, Andalusia, Iowa, Quadrangle.

LINWOOD QUARRY SITE
(Formerly Umthun Trucking)

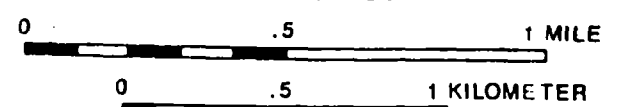
Buffalo, Iowa

WELL SAMPLE LOCATIONS

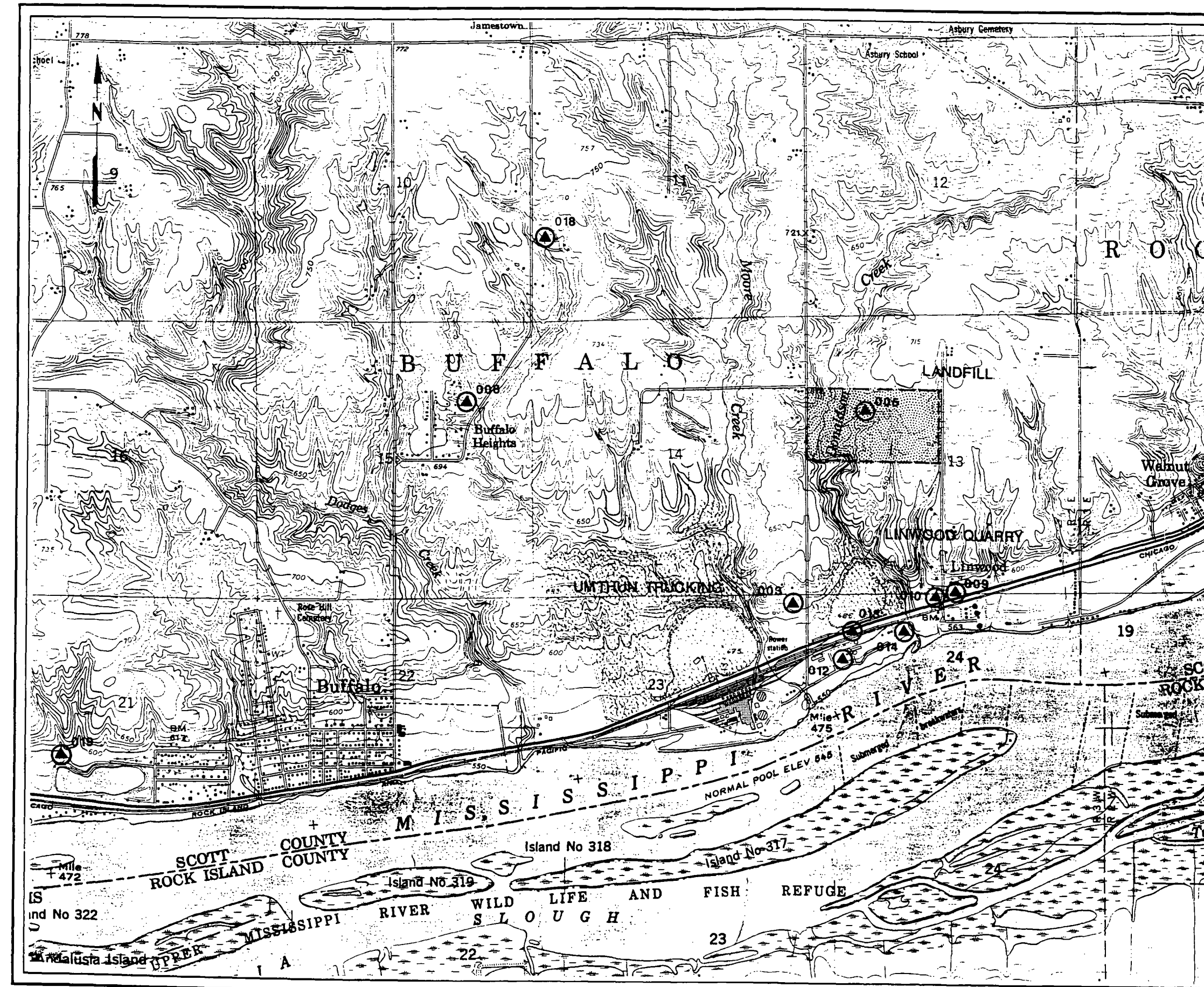
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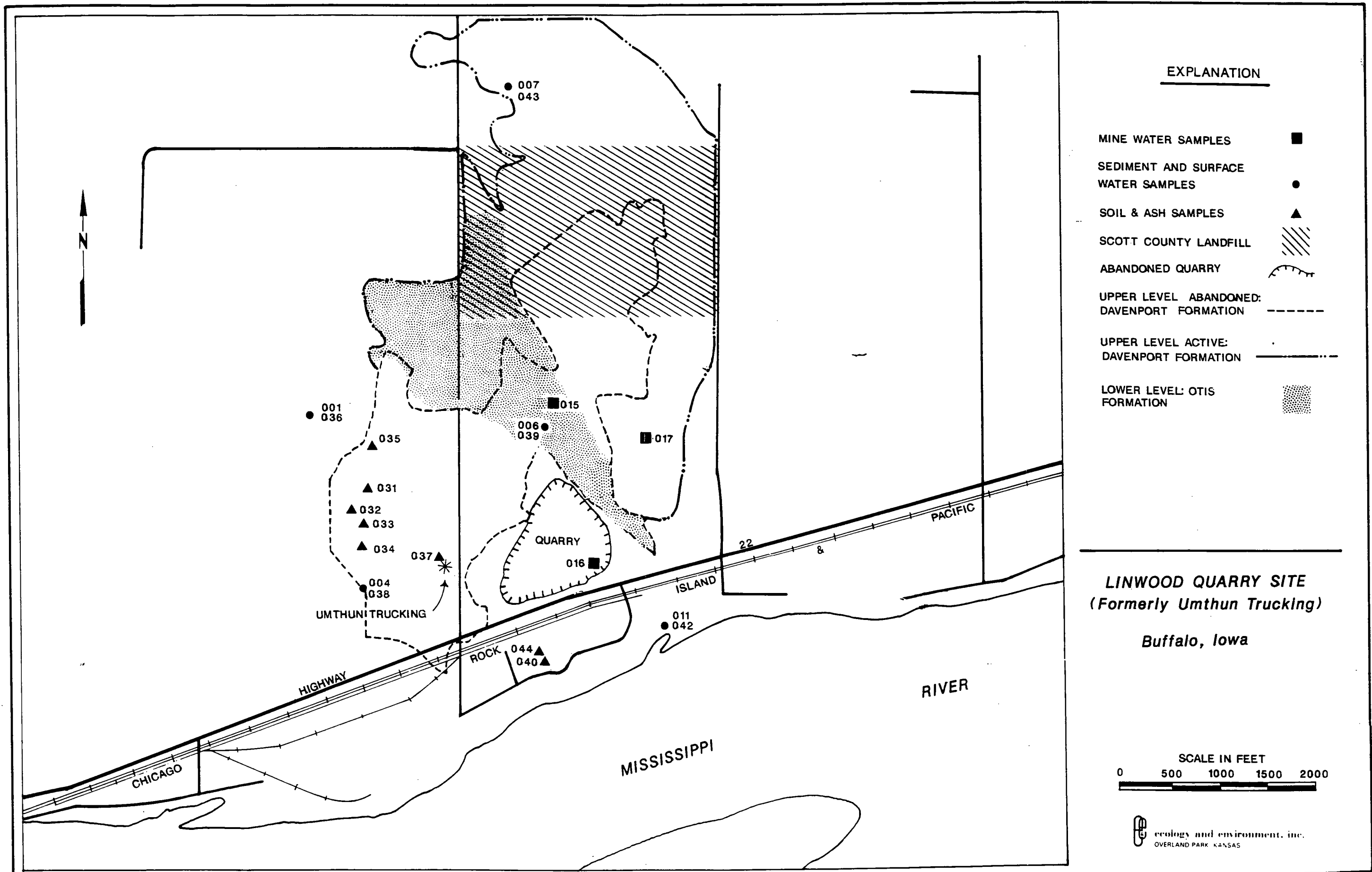


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 OVERLAND PARK, KANSAS



WASTE SITE TRACKING NO.: IA0236
 PREPARED BY: LEE ROBERTSON FIT 1989
 SOURCE: USGS ANDALUSIA, IA 1970 QUAD

Figure 1: Site Location with Well Sample Locations



**Figure 2: Site Map
with Sample Locations**

Table 1
Ash, Sediment, and Soil Sample Summary
Linwood Quarry (Formerly Umthun Trucking)
Buffalo, Iowa
Sample Series DC943

Sample	Description	Location
031	Kiln Ash	~50 ft. S of quarry vent, N of Umthun
032	Kiln Ash	~150 ft. SE of quarry vent
033	Kiln Ash	E side of hilltop, South of quarry vent
034	Kiln Ash	~100 ft. down hillside (SE) of sample 033
034D	Kiln Ash	Duplicate of 034
035	Bkg. Soil	Hilltop 250 feet north of quarry vent
036	Bkg. Sediment	Moore Creek, NNE of ash piles, upstream
037	Soil	50 feet N of Umthun well
038	Sediment	Moore Creek downgradient Umthun terminal
039	Sediment	Donaldson Creek between Landfill and Linwood Quarry
040	Kiln Ash	Linwood Quarry Limeplant South blower at kilns
041	Kiln Ash	Limeplant, cooling rollers overflow
042	Sediment	Confluence of Donaldson Creek and Mississippi River
043	Bkg. Sediment	North of landfill on Donaldson Creek
044	Soil	Moses Residence

Note: All samples consisted of 5 aliquots collected from 0 to 6 inches. See Figure 2 for sample locations.

Table 2
 Mine, Surface, and Well Water Sample Summary
 Linwood Quarry (formerly Umthun Trucking)
 Buffalo, Iowa
 Sample Series DC943

Sample #	Description	Temp Location	Temp °C	pH	Conductivity µmohs
001	Surface Water	Background on Moore Creek, NE of Quarry vent			
002F		Field Blank			
003	Well Water	Umthun terminal	25°	7.63	500
004	Surface Water	Moore Creek downstream from ash piles			
005	Well Water	Scott County Landfill	13°	7.67	500
006	Surface Water	Donald Creek between landfill and quarry			
007	Surface Water	Donaldson Creek North (upstream) of landfill			
008	Well Water	Willard Wing Residence	14°	7.4	675
009	Well Water	Tom Egolf Residence	17°	7.71	650
010	Well Water	Randy Dittmer Residence	15°	7.7	1500
011	Surface Water	Confluence of Donaldson Creek with Mississippi River	17°	6.5	700
012	Well Water	Well head at Linwood Limeplant	16°	6.7	500
013	Well Water	Bathhouse at Linwood Quarry N. of Hwy 22	16°	7.3	900

Table 2 (Continued)

Sample #	Description	Location	Temp °C	pH	Conductivity µmohs
014	Well Water	Linwood Quarry office before filter system	17°	7.1	800
015	Mine Water	Linwood Mine, 2nd level, under mine vent area	19°*	6.65	600
016	Mine Water	Discharge pond in abandoned quarry works	22°*	9.8	1000
017	Mine Water	Pumped discharge from well head outlet pipe at surface evap. pond	12.5°	6.6	640
017D	same as 017	same as 017	12.5°	6.74	640
018	Well Water	Donald Moses Residence	14.5°	6.74	640
019	Well Water (chlorinated)	City of Buffalo Well #2	14.5°	6.20	900

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*Measurement recorded 30 minutes after sample was collected.

Note: See Figures 1 and 2 for sample locations.